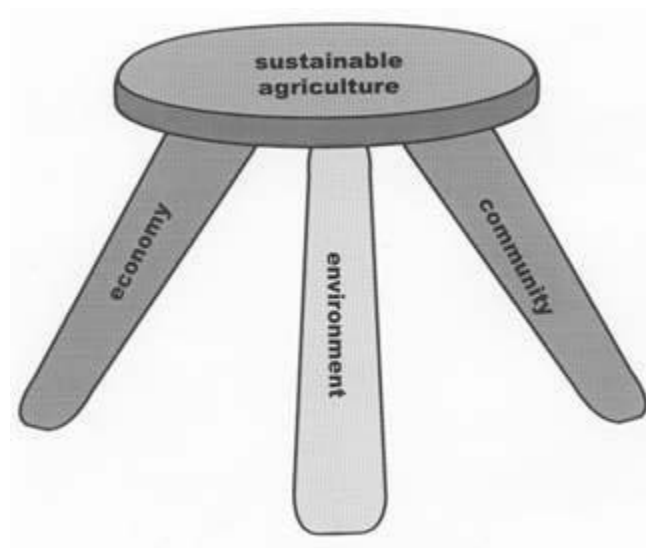


What is Sustainable Agriculture?

In the words of one Iowa farmer, sustainable agriculture is a journey rather than a destination. The word “sustainable” comes from the word “sustain” which means to maintain, support, or to endure. People involved in sustainable agriculture are trying to identify and solve the problems in our current agricultural system in order to provide food and fiber in a healthy environment for people over the long term. At least for now, no one has developed a fully sustainable agriculture, and for the foreseeable future there will always be room for improvement.

The Three Legs of Sustainability

Imagine a 3-legged stool . What happens if one of the legs breaks, or one leg is missing entirely? The whole stool falls over. The 3-legged stool has become a metaphor for the need to consider the economic, environmental, and social impacts of agriculture (or any of our actions). If our agricultural system has unacceptable impacts in any one of these spheres, it can't support producers and contribute to the community over the long term.



In order to be sustainable, three areas must be addressed by our agriculture, food, and natural resource systems. These three areas are **economics, environment, and community**. A sustainable agriculture must provide a fair and reasonably secure living for farm families. It should minimize harm to the natural environment. It should maintain basic natural resources such as healthy soil, clean water, and clean air. And it should support viable rural communities and fair treatment of all people involved in the food system, from farm workers to consumers.

The 1990 Farm Bill defines sustainable agriculture as:

“an integrated system of plant and animal production practices having a site-specific application that will, over the long term:

- satisfy human food and fiber needs
- enhance environmental quality and the natural resource base upon which the agricultural economy depends
- make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls
- sustain the economic viability of farm operations
- enhance the quality of life for farmers and society as a whole.”

Let's take a look at each individual “leg” of the sustainability stool.

Sustainable agriculture is “economically sustainable.” Agriculture should provide a secure living to farm families and others employed in food production and processing. An economically sustainable approach also provides access to good food for all people.

Sustainable agriculture is “environmentally sound.” It preserves the quality of basic natural resources that the farms, businesses and the surrounding environment rely on, including soil, water, and air. Agriculture affects natural resources. Cooperating with natural resource systems instead of trying to overpower them can offer benefits to food production as well as the natural environment.

Sustainable agriculture is “good for families and communities.” It promotes opportunities and cooperative relationships for family and community members. For example, a local food marketing system called community supported agriculture (CSA) offers opportunities for people to get into farming without major capital investment; provides work for family members, including children, on the farm; and creates direct partnerships with consumers in the community.

John M. Gerber



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He has a B.S. from the University of Rhode Island in Botany and an M.S. and Ph.D in Horticulture from Cornell University. He is an avid gardener and raises chickens in his suburban backyard.

Sustainable food and farming part I: Is sustainable agriculture sustainable?

This series of posts will explore what it means to be sustainable and compare the so-called mechanistic and ecological approaches to farming and science.

4Share0



October 1, 2010

[John M. Gerber](#)

“There is always a well-known solution to every human problem—neat, plausible, and wrong.” – H.L. Mencken

When I began my career as an agricultural scientist, the “well-known” solutions for farming problems were mostly about which fertilizer to apply or which pesticide to spray. Fortunately, that rather simplistic approach lost favor as we became more aware of its unintended consequences. Nitrates in our drinking water, herbicides in the surface water, and tons of soil running down stream were pretty clear indicators that something wasn’t working.

Of course it was yet another economic crisis in the mid-1980’s that drove farmers to join together to “invent” something they chose to call *sustainable agriculture*. Agricultural scientists were slow to get the message, but eventually most came around to talk about sustainability in their own terms. Today, sustainable agriculture is pretty mainstream. But the terms that mainstream agricultural scientists choose to use (that of reductionist science) is really not such a radical departure from the past. Loosely described as “input substitution,” most agricultural scientists began trying to develop safer ways to apply pesticides and more organic means of applying nutrients. With some exceptions, the scientific community struggled to think about farms as ecosystems, and most university trained scientists continued with a mechanistic approach to solving problems on the farm.

Many farmers on the other hand quite naturally saw farms as complex agricultural ecosystems, even when they didn’t have all of the tools or ability necessary to manage such complex systems.

[This series of posts](#) will explore what it means to be sustainable and compare the so-called mechanistic and ecological approaches to farming and science. I will address this topic using both theory and practice, and while my exploration of sustainability will most likely apply to

many aspects of life, I intend to focus principally on food and farming. This is where my heart is and this is the area of study that I have a modicum of experience and some expertise.



Any linear mechanistic approach to solving problems in agriculture, a decidedly complex ecological system, is likely to fail in the long run. As the quote from H.L. Mencken above suggests, even the most obvious solutions applied to complex systems are likely to be wrong when approached from the wrong frame of reference. So perspective matters. My next post will explore ways of looking at sustainability as I try to answer the question “*is sustainable agriculture sustainable?*”

If you are curious about the author of this blog, you are welcome to check out a [bio statement on my web page](#), where you may find some background information as well as links to some of [my writing](#) and [videos](#).

My hope is that this exploration elicits a passionate but thoughtful response from readers. So let us begin this discussion with a question.....

.....is sustainable agriculture sustainable?

What do you think?

Sustainable food and farming part II: symbols and perspectives matter!

**What if "Mother Nature" was our model for sustainability?
What if we tried to understand how natural ecosystems function and then design managed ecosystems using ecological principles?**

7Share19



October 5, 2010

[John M. Gerber](#)

In my [first post of this series](#), I asked the question “*is sustainable agriculture sustainable?*” Of course the answer will depend largely on how we view sustainability. In the standard (and for the most part universal) perspective, sustainability is viewed from three perspectives;

1. Environmental Quality
2. Social Equity
3. Economic Viability

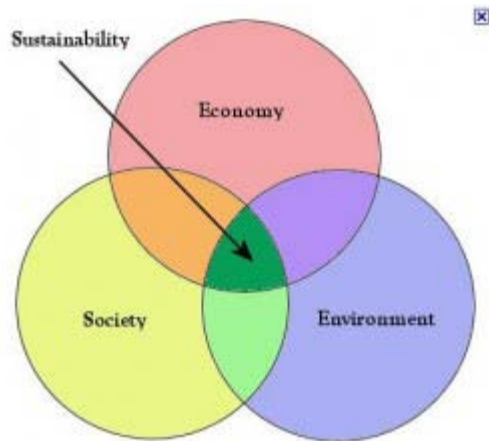
..... or variants of these.



If sustainable systems need to be supported by three legs of a milking stool (to put it in a farming context), it is clear that all three are important as a two-legged stool won't stand. While this is a simple, powerful image and perhaps useful as an introduction, it also comes with problems.

The three-legged-stool image is a variant of the commonly used Venn diagram which appears in many forms throughout the academic and farming literature as well as in marketing materials for various sustainable products.

It too is becoming widely used and recognized (at least among those of us who think about this stuff) and looks like this:



Competitive Model

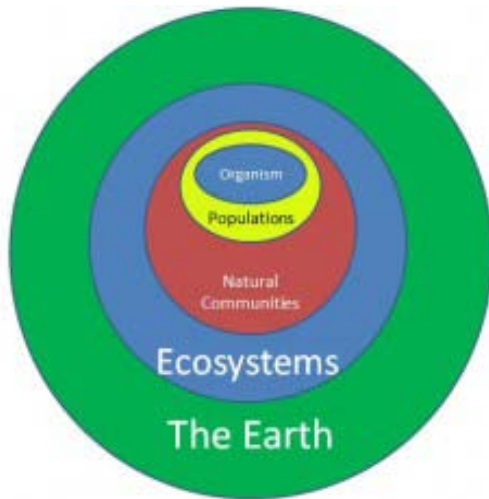
Of course, the idea is that we all want to work toward the region where the circles overlap! My problem with this commonly used depiction of sustainability is that it puts equal importance on each circle (or leg) and creates a situation in which **competition among the three perspectives is inevitable**. This is a problem!

If we approach sustainability from the perspective of three interlocking yet still competing objectives, we will never change our personal lives or our social systems in ways that can be sustained. If this diagram remains as our model of sustainability then I'll answer the question [in my previous post](#) (is sustainable agriculture sustainable?) with a resounding NO! While this commonly accepted model of sustainability is a useful way to talk to someone who is new to the conversation, it is not adequate.

From this viewpoint, economic concerns will always trump environmental quality and social equity. In fact, it could be argued that most modern industrial systems (including agriculture) are designed to exploit both people and the environment in order to maximize economic return. A more progressive approach might be to "*optimize economic return with the least negative impact on people and the environment as possible.*" Have you ever heard that one? I have. But it is still about trade-offs. Can't we do better?

How can we look at sustainability in a way that integrates economic viability, environmental stability and social equity? Where do we look for an answer? **Well, to me..... we look to the earth as our teacher.**

I will examine this idea [in my next post](#), but to give you a taste of where we are headed – lets think about living systems (like farms) as levels of complexity, each level embedded in the next more complex level.



If we begin to see living systems as subsystems embedded in larger subsystems from the atom and molecule through the living cell, organs, organisms and on “up” through levels of ecological complexity..... then maybe we can make some sense out of our sustainability diagram.

What if “Mother Nature” was our model for sustainability? What if we tried to understand how natural ecosystems function, and then design managed ecosystems (like farms) using principles of ecology?

Well, maybe then we would turn our Venn diagram into a model that depicted the relationship among each perspective more like a living system – more like Mother Earth!



Living Systems Model

What if we saw that a healthy economy depended on a healthy social system? And a healthy social system depended on a healthy environment? Maybe then we would see that competition among these three “legs of the stool” will not get us where we want to go!

To me, the symbolic representation of the three perspectives is important. The living systems model represents a richer understanding of the relationships among potentially competing objectives. But I'm really curious about what you think, so let's ask some questions.

- 1. How might this “living systems” model of sustainability change our thinking?**
- 2. How might it change our behavior?**
- 3. How might it change the way we grow food?**
- 4. What do you think?**